

REMARKS

Status of Claims

Claims 3 and 4 are pending. Claim 3 has been amended so as to incorporate all of the limitations of claim 2. Accordingly, claim 2 has been cancelled without prejudice. Claim 1 has also been cancelled without prejudice. No new matter has been entered.

Rejection under 35 U.S.C. § 103(a)

Claims 1-2 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hosoya et al. (US 2004/0076882). Claim 3 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Hosoya et al. in view of Uenae (JP 2004-362777). Claim 4 is also rejected under 35 U.S.C. § 103(a) as being unpatentable over Hosoya et al. in view of Uenae and further in view of Ohzuku et al. (US 2003/0087154). Applicants respectfully traverse these rejections for at least the following reasons.

First, since claims 1 and 2 have been cancelled, the rejection of these claims is now moot.

In rejecting original claim 2, the Examiner asserts that Hosoya discloses all of the limitations of claim 2 except for an added amount of the second active material being at least 5% and at most 20% in capacity of a total amount of capacity of the positive electrode active material. The Examiner, however, asserts that since Hosoya discloses the amount of the second lithium transient metal oxide is in the range of 4-50%, which overlaps the claimed range of 5-20%, Hosoya renders claim 2 obvious.

Applicants respectfully submit that in the subject matter of amended claim 3, which now incorporates the subject matter of claim 2, the amount of the second active material being at least 5% and at most 20% yields the discharge curve having points of the step-like inflection. Such a

discharge characteristic gives a moderate rate of voltage decrease near the end of electric discharge. As a result, it moderates a rate of current increase near the end of electric discharge, and reduces a steep rise in temperature of the battery when being discharged with a large current. In the nonaqueous electrolyte secondary battery composed as described above, since the internal temperature can be checked more accurately with a temperature sensor, it helps ease control of the electric charges and discharges, and thereby prolongs usable life of the battery (see, page 10, lines 2-13 of the specification).

It is, however, noted that Hosoya fails to recognize the above mentioned unexpected results obtained by limiting the amount of the second active material being at least 5% and at most 20% because Hosoya fails to disclose the discharge curve having points of the step-like inflection. As such, it would not have been obvious to modify the amount of the second active material of Hosoya to arrive at the subject matter of amended claim 3.

Further, in rejecting original claim 3, the Examiner asserts that although the composition of Li in LiCoO_2 of Hosoya (i.e., 1) does not overlap the claimed range, claim 3 would be obvious over Hosoya as combined with Uenae. Applicants disagree.

Applicants respectfully submit that in the subject matter of claim 3, limiting the amount of Li from 0.90 to 0.98 yields an unexpected result that is the decrease in voltage most gently near the end of electric discharge, thereby alleviating most the drastic rise in temperature of the battery (see, page 10, lines 13-21 and Table 1 of the present application). A designed capacity of the battery decreases substantially in proportion to a decrease in the theoretical capacity of the positive electrode if the x value is less than 0.9. If the x value exceeds 0.98, on the contrary, an irreversible capacity of the positive electrode decreases, and the battery comes to its discharge-

end voltage due to a rise in voltage potential of the negative electrode. This impairs the effect of voltage control using the discharge voltage of the positive electrode, thereby causing the battery to heat up at the end of electric discharge (see, page 10 line 23 to page 11, line 3 and Table 1, specifically comparison example 3, of the present application).

In contrast, since Hosoya uses only the Li amount of 1 or 1.02 in the examples (see, TABLES 1, 5 and 6 of Hosoya), Hosoya fails to recognize the problems and effects mentioned in the above portion of the present application. As such, it would not have been obvious to modify the Li amount of Hosoya to arrive at the subject matter of claim 3.

Applicants also note that Uenae and Ohzuku fail to cure the deficiencies of Hosoya. Accordingly, Applicants respectfully submit the combination of Hosoya with Uenae or Ohzuku does not render claim 3 and dependent claim 4 obvious. Applicants respectfully request that the Examiner withdraw the rejection of claims 3 and 4.

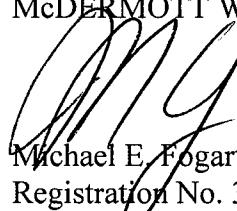
CONCLUSION

Having fully responded to all matters raised in the Office Action, Applicants submit that all claims are in condition for allowance, an indication for which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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